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The United States should create and maintain the capability of rapidly deploying forces into cold regions to conduct sustained combat operations. It is recommended that these forces be comprised of an Army division, a Marine Expeditionary Unit, an Air Expeditionary Force, and a Carrier Battle Group. The vast majority of United States military units have a permanent mission of being able to deploy anywhere in the world to fight and win the nation's wars. History has shown that unprepared military forces deployed to cold weather combat may suffer severe losses from the climate. An example of poorly prepared forces suffering unnecessary casualties due to the weather is the Aleutian Campaign of World War II.

The preponderance of current cold weather training conducted among the services is focused on survival, and not on operations. Therefore, a Joint Arctic Combat Training Center should be created to train and evaluate the readiness of arctic-designated units. The Department of Defense and the respective services should correlate home-station climate and anticipated contingency operations. Existing equipment may be better modified for use in the cold, and antiquated equipment should be eliminated or replaced. Faced with combat in continuous below-zero temperatures, the operational commander must make his choices carefully using the operational factors and functions. The confidence that he can introduce acclimatized forces into a cold weather theater with no further training gives the operational commander more options, and a better chance for victory.

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FIGHTING THE COLD: THE NEED FOR STANDING COLD WEATHER COMBAT CAPABILITIES

by

John G. Bechtol
Major, USA

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract of

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COLD WEATHER COMBAT CAPABILITIES

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Seasonal effects on terrain, weather, and sea conditions can significantly affect operations and logistic support for the joint force and should be carefully assessed before and during operations.[1]

Joint Chiefs of Staff, *Joint Publication 3-0: Doctrine for Joint Operations,* 2001

The United States military is expected to deploy worldwide to win the nation's wars. History has shown that the environment, especially cold weather, can affect operations and even destroy military forces. Given the expectation that U.S. forces can deploy on short notice anywhere in the world, one must be concerned if U.S. forces are prepared to operate in those environments where the temperature remains below zero degrees Fahrenheit for extended periods of time (Figure 1). As U.S. forces deployed to Afghanistan in the fall of 2001 to attack Al-Qaeda and Taliban forces, there was much consternation in the media as to whether the U.S. could defeat the enemy before winter, and if not, how the U.S. would perform in the cold. *Newsweek* magazine reported that the Bush administration was "worried that the onset of winter will pretty much rule out an effective ground campaign."[2] This comment is unfounded. U.S. forces perform well in the cold provided they're given the time to prepare. However, that preparation time may not always be available. A solution is to give specific military forces the mission to fight in the cold immediately upon notification. Maintaining a moderate standing cold weather capability is easily within the reach of all the services. These forces would allow the operational commander to deploy immediately, in the dead of winter, with no train-up period required. Due to the nature of the cold weather threat and injuries from exposure, the emphasis on preparedness should be first on light field forces, secondly mechanized forces, and thirdly forces operating from installations or ships. The size of the cold weather mission units should be

the basic combat entity from each service: an Army division, a Marine Expeditionary Unit (MEU), an Air Force Air Expeditionary Force (AEF), and a Navy Carrier Battle Group (CBG). These forces must be given the specified mission to fight in the cold, preferably stationed in a cold region, then resourced and evaluated accordingly. The establishment of a Joint Arctic Combat Training (JACT) center is needed to assess their readiness. Such a force would provide the operational commander the ability to start building his combat power in theater during winter without delay, giving follow-on combat forces the time needed to train and prepare for cold weather operations.

The common term "cold" is relative to the environment with which a person is accustomed. Army Regulation 70-38, *Research and Development, Test, and Evaluation of Material for Extreme Climatic Conditions* defines three categories of cold weather. First, "basic cold" is defined as temperatures from -5 degrees to -25 degrees Fahrenheit. "Cold" is defined as -35 to -50 degrees Fahrenheit. Temperatures between -60 and -70 degrees Fahrenheit are classified as "severe cold."[3] In such a harsh climate, the weather must be considered more than an obstacle, but another enemy with which one has to contend. How does the operational commander face the environmental enemy? Are the forces and equipment with which he is to accomplish the mission capable of not only defeating opposing forces, but also nullifying the effects of cold weather? The military maintains a number of cold weather schools and testing agencies in an effort to maintain individual survival skills and equipment capabilities. However, with the exception of the U.S. Marine Corps, the services generally lack a formal geographic focus on maintaining the ability to immediately deploy and fight in cold weather. The proven tactics, techniques, and procedures at the unit level are largely developed from necessity by virtue of being stationed in a cold environment, and are not a conscious decision by the service

component chiefs to maintain arctic-trained units. A technologically, and even numerically, superior force may be affected to such an extent by cold weather that it is defeated by a recognizably inferior, but cold weather trained force.

An example of land, sea, and air forces of varied preparedness engaged in cold weather combat is the Aleutian campaign of World War II. Lessons may be drawn as to the value of combat training in cold weather from this campaign. The operation to retake Attu Island from the Japanese is especially enlightening as it encompasses all components: land, sea, and air. Only by training on combat tasks with organic equipment in cold weather may requirements and shortfalls be identified. Furthermore, the Aleutian campaign serves as an excellent example for the operational level commander of difficulties his personnel and equipment will face if engaged in a cold environment.

The ignorance about the isolated, misunderstood and mysterious Aleutians would be reflected in the design of forces and equipment by both the U.S. and Japanese in the upcoming campaign.[4]

David H. Huntoon, Jr., *The Aleutians--Lessons from a Forgotten Campaign*

The Aleutian Campaign

The Aleutian Island chain extends over 1,100 miles west from the Alaskan Peninsula. The 279-island chain terminates with the island of Attu, which lies 650 miles from the Kurile Islands, home of the Japanese Northern Fleet in 1942. The Bering Strait, at its narrowest point, separates Attu from Siberia by 57 miles. The sizes of the islands range from Unimak (1,400 square miles) to small rocks projecting from the water surface. Most beaches are rocky with

steep shorelines. The islands are treeless, with the only vegetation being the delicate tundra that turns quickly to mud underfoot. The snow line begins at 300 feet above sea level and thick fog at the same elevation is common. Rugged, sharp ridgelines and mountain ranges vary in height to over 9,000 feet. The weather is as harsh as the terrain. Precipitation falls an average of 250 days per year, with dense cloud cover 90 percent of the summer and 50 percent of the winter. Average temperatures at sea level are 50 degrees in the summer, and 33 degrees in the winter. Although the temperatures seldom drop below zero, they are intensified by constant wind chill. The average wind speed is 12 knots, often blowing at 24 knots or more for days at a time. Cold winds from the north passing over warmer ocean currents from the south, mixed with the irregular topography of the islands, create a local phenomenon known as a Williwaw; these are hurricane force winds that can arrive with no warning from any cardinal direction.[5] Despite the limitations due to weather, both the Japanese and the Americans recognized the strategic location of Alaska and the Aleutian Islands. General Billy Mitchell said in 1923: " I am thinking of Alaska. In an air war, if we were unprepared Japan could take it away from us, first by dominating the sky and creeping up the Aleutians… Japan might well seize enough of Alaska to creep down the western coast of Canada. Then we would be in for it.'[6] Thus, Japan and the U.S. prepared, to varying degrees, for battle in this harsh environment.

Strategic and Operational Objectives of the Belligerents

The Japanese attack of the Aleutian Islands in June 1942 had two basic functions: to draw the American fleet toward its destruction at Midway, and to secure Japan's northern flank on its Pacific defensive perimeter. American motivation for countering the Japanese attack was to drive the enemy from American soil and maintain a clear sea line of communication though the Pacific

to the Soviet Union. Together, the belligerents were drawn into an operation which had a nearly even ratio of Japanese to Americans casualties, over half of which were caused by the harsh climatic conditions.

On the operational level, Japanese objectives were to establish bases in the western Aleutians in order to provide early warning of any American fleet movement toward the Japanese Islands. They were determined to prevent another Doolittle-type air raid on Japan. To this end, Japanese carrier forces conducted air attacks on Dutch Harbor, Alaska and the surrounding airfields in order to weaken American forces and prevent interference in the establishment of bases on the islands of Attu and Kiska. American operational objectives were to destroy Japanese forces in the Aleutians and prepare for future operations against Japan using the islands as a launch point.

Japanese Operational Factors and Functions

The Japanese understood there would be many difficulties in attacking and establishing a base in the Aleutian Islands. In terms of the operational factors of space, time, and forces they had mixed success. The Japanese faced the challenge of exterior lines. Initial lines of operations (LOO) stretched over 1,000 miles from Japan to Dutch Harbor. The Japanese established bases of operations on Attu and Kiska in order to conduct further operations against U.S. forces in Alaska and the northern Pacific. Although their LOOs had been reduced by nearly seventy percent with the establishment of the Attu and Kiska bases, their lines of communications (LOCs) still extended all the way back to the Kurile Islands. (Figures 2 and 3.) Long LOCs and LOOs were commonplace in the Pacific. However, unique to the Aleutian campaign were the extreme weather conditions under which the Japanese had to operate. The terrain on the islands

of Attu and Kiska did not lend themselves to a rapid build-up of combat power. The Japanese had not properly addressed the length of time needed to create infrastructure under arctic conditions. Examples are the airfields the Japanese attempted to construct on Kiska and Attu. The construction equipment that landed with initial Japanese forces was inadequate for building runways in the tundra. Additional equipment was not sent until February 1943, by which time American warships had arrived in sufficient strength to interdict Japanese supply lines.[7] In contrast, The Japanese could do very little to interdict American supply lines. The Japanese eventually found themselves losing combat power to both the environment and combat faster than they could replenish it.[8] The forces the Japanese allocated were sufficient in number of combat specialties, but not in combat support or service support. Support operations were not given the same attention as combat operations. The result was an insufficient engineering effort and failure of their mission to establish a permanent base in the Aleutians.

It is also worth examining several of the Japanese operational functions and how they influenced unit effectiveness. By the time the Americans invaded Attu, the Japanese had occupied the island for nearly a year and had learned to use the severe climatic conditions to their advantage in relation to movement and maneuver. Japanese forces, upon learning of the impending invasion, moved from their garrison facilities on the coast to defensive positions above the snow and fog line. Their goal was to use the fog to hinder U.S. air support, but more importantly make the Americans extend their LOO from the coast inland as far as possible. This tactic worked as the American supply situation became critical within the first 24 hours. Japanese command and control was centralized under the operational leadership of Admiral Kakuta, Commander of the Japanese Northern Fleet. Kakuta's headquarters was located in the Kurile Islands and he was familiar with the weather his men would face in the Aleutians. Better

individual equipment and cold weather preparedness, clear intent known down to the soldier level, and redundant communications enhanced Japanese ability to command and control. Kakuta had not studied the terrain, and thus did not anticipate the physical difficulties in building a base.

Fires were perhaps the weakest operational function of the Japanese. Due to their inability to overcome the weather and terrain to create a workable infrastructure, they were never able to move ashore air or fire support systems in sufficient strength to seriously influence the battle. Had the Japanese been able to bring operational fires to bear on the American invasion force, evidence suggests that the initial American assault would most likely have failed.[9]

The Japanese logistic effort never blossomed beyond that needed to sustain individual soldiers and added little to its ability to project combat power. Perhaps the strongest operational function was that of protection. Due to the operational commander's knowledge of the Aleutian weather, his forces benefited from suitable individual clothing and equipment. For example, Japanese soldiers received knee-high leather boots with two sets of removable felt lining that could be rotated regularly. Outerwear effectively kept the soldiers warm both during work and idle time. Individual soldier preparedness was a priority at the operational level and was to partially make up for the lack of a numerical or technological edge. Finally, the Japanese had a slight intelligence advantage due to the fact that weather systems moved west to east, so the Japanese were better able to predict the weather over target areas. The opposing U.S. forces had the opportunity to capitalize on Japanese weaknesses, but unfortunately suffered their own operational-level deficiencies.

American Operational Factors and Functions

An examination of American operational factors reveals weaknesses in all areas. While the U.S. theoretically had interior lines, the distances involved were so vast that they equaled that of the Japanese. There was no overland road from the lower 48 to the Alaskan Territory resulting in a competition for sealift assets with other theaters. Although an American territory, Alaska's population of 230,000 at the outbreak of war didn't offer much in terms of resources. Until the late 1930's, only 300 military personnel were in Alaska manning a turn of the century fort.[10] The Americans made good use of time immediately prior to the Japanese attack by amassing enough combat power to contain Japanese gains. However, the operational ground forces that were to be committed to the counterattack on Attu did not benefit from a wise use of time. Due to the low priority of the theater, there were insufficient forces trained or acclimatized to the cold to fulfill the operational requirements. The result was a misuse of forces. In early 1943, the Army identified the 7th Infantry Division (Motorized) as the land force for the attack and capture of Attu and Kiska.[11] At the time of notification, the 7th Division was training for desert warfare in California. The unit had three months to transition from a desert force to an amphibious force capable of operating in cold weather. The 7th Division was issued hot weather uniforms and received classes on tropical diseases in an effort at deception.[12] They never received proper cold-weather training. The Japanese learned of the invasion in ample time to reposition forces in the hills. Officers sent from Alaska to San Diego to help prepare the 7th for arctic operations emphasized the need for a robust, manpower intensive supply network, and fire support; they were largely ignored. The leadership of the 7th Division was focused purely on the Japanese. They felt they could overcome the discomforts and difficulties of the terrain and weather in due

course.[13] The weaknesses of the ensuing operation are evident when examining the American operational functions.

The American command and control structure was split along Army and Navy lines, with both services answering to distant higher headquarters. Rear Admiral Theobald commanded the North Pacific Force, while Major General Simon Buckner commanded the Alaskan Defense Command.[14] Buckner had spent the last two years building up Alaska's defenses from scratch. Theobald and his force were dispatched from Pearl Harbor on May 21, 1942, only weeks before the Japanese attack.[15] The two strong personalities clashed during their first meeting May 27, 1942. Theobald requested clarification of command roles from Admiral Nimitz. Nimitz replied, "The command relationship between the Alaskan Defense Command under General Buckner and the Northern Pacific Force is to be by mutual cooperation."[16] The relationship between the two commanders therefore rested on mutual cooperation and understanding, neither of which was forthcoming. This relationship was further complicated by communication problems due both to extreme distances, and to natural electrical interferences caused by the northern latitude.[17] The two commanders worked on operational plans together but they were never fully synchronized.

In January 1943, the timid Theobald was replaced with the more aggressive Rear Admiral Kinkaid.[18] Inter-service cooperation greatly improved and U.S. operations evolved from disjointed harassment to a synchronized operation to retake Attu. The U.S. forces' movement and maneuver was excellent at sea despite foul weather. However, as the ill equipped and trained land forces disembarked movement quickly slowed to a snails pace. The slow movement of ground forces is amply illustrated by the lack of artillery support early in the operation. The artillery pieces were able to move only 75 meters from the beach before the tundra gave way under their weight.[19] The engineers were then faced with the unforeseen task of building a road

in order to move the artillery and other assets inland. Additional fires were to be provided by close air support and naval gunfire. Heavy fog made aircraft were of limited use, and naval gunfire ammunition stocks rapidly depleted.

The land component commander Major General Brown and his planners focused disproportionately on the Japanese enemy and ignored warnings about the climatic dangers. Colonel Alexander, an Alaska veteran, had been sent to San Diego to assist the 7th Division with planning. Alexander had warned, "For every soldier engaged in combat there must be two carrying supplies, one going and one coming from the front line. We could not do it with wheels or tracks, so we would have to do it with manpower, the quantity of which would be determined by the distance from the beach to the front lines."[20] The supply situation for U.S. ground forces was critical within the first 24 hours. Vehicles became mired in the tundra and supplies had to be carried by hand. Since planners had disregarded Alexander's recommendation there was no plan or allocation of personnel for this mission; combat troops had to be used to resupply the front lines. Furthermore, little attention had been paid to the need for hot food and shelter from the elements. The result was numerous cases of frostbite. The mind-numbing cold affected each soldier's individual ability to operate. By the seventh day, the U.S. had suffered 1,100 casualties, with 500 of those being cold weather injuries.[21]

The deficiencies addressed thus far combined and contributed to the Americans' poor job of force protection. During operations in the Aleutians, force protection against the weather was as important, if not more so, than protection from the enemy. The U.S. had approximately 14,000 personnel involved in the Attu operation. Of these men, 549 were killed and 1,148 wounded in action. Non-battle injuries were 614 suffering from illness caused by exposure, 318 minor cold weather injuries, and 1,200 severe cold weather injuries.[22] The Americans' ability to gather

intelligence throughout the campaign was hampered by the weather. The west to east weather pattern precluded good forecasting over target areas. One result was the enemy's ability to evacuate Kiska undetected. Although the U.S. eventually triumphed in the Aleutian campaign, there are lessons that are still applicable today.

Plans for land combat must account for the visibility and clutter of the terrain and the effects of weather and climate.[23]

U.S. Army, *Field Manual 3-0*, 14 June 2001, p.1-11.

Lessons Learned for Today's Operational Commander

There are numerous lessons to be gained from the Aleutian campaign. American forces made alterations to equipment for future amphibious landings and operations in the cold. Technological advances enable today's forces to overcome many of the shortfalls of the Aleutian campaign. Nevertheless, there are several lessons within the framework of operational factors and functions that need to be addressed regarding future operations in cold regions.

Operational Factors

The factor of space has been drastically reduced over the past 60 years. Forces now move at a much more rapid rate from one theater to another, but this can be as much a shortfall as a capability. The rapid transfer of forces from one climate to another precludes personnel from acclimatizing or reconfiguring their equipment. This fast movement enables the operational commander to plan on engaging the enemy quickly, but might also cause him to overlook the

effect of climate. Therefore, the question arises as to whether it is a better use of time to delay deployment to enable units to conduct cold weather training, or quickly deploy units knowing that they will be less productive at their tasks and run a high risk of cold weather injury or equipment failure.

Personnel performance is slowed significantly in cold weather. As demonstrated in the Aleutian campaign, simple tasks become complicated by cumbersome gear. Failure to use proper gear to protect oneself from the environment may speed performance temporarily, but greatly increases the risk of cold weather injuries. A study conducted by the U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory examined the rapid runway repair process per Air Force Regulation 93-2. Under moderate weather conditions, the task takes 230 minutes. Given the conditions of 20 degree Fahrenheit, windy, with snow, the same task took 415 minutes, an 80 percent increase.[24] The effect on equipment and personnel is also evident in the standard operating procedures (SOP) of the Army artillery battalion stationed at Fort Wainwright, Alaska. Whereas the unit normally allocates 15 minutes to pack all equipment to move, in cold conditions the same task takes twice as long.[25] The airfield repair study and the internal SOP of the Army unit are not widely disseminated within or across services, and may not be readily apparent to units deploying to a cold area of operations or to the operational commander.

Most military units have a worldwide deployable mission statement. As units are matched to various operational plans that commit them around the world, there is much less of a focus on training for a specific geographic area. One exception is the United States Marine Corps' mission to reinforce Norway, which the Marines take seriously.[26] A division’s worth of equipment is prepositioned and an annual MEU-level exercise called "Battle Griffin" is

executed.[27] The Marine unit assigned the Norway mission is stationed in Camp Lejeune, NC, and goes through training at a cold weather school prior to deployment to the exercise. However, contingency planning dictates they fly directly to theater in a crisis without the benefit of cold weather training.[28] Furthermore, all combined arms training in preparation for "Battle Griffin" takes place at Camp Lejeune.[29] In contrast, the Army's 172d Infantry Brigade stationed in the interior of Alaska routinely deploys to Thailand to train for wartime contingencies. It's combined arms training takes place primarily during the winter months when temperatures routinely fall below -30 degrees Fahrenheit. Personnel develop cold weather expertise by virtue of being stationed near the Arctic Circle, not because the brigade has an arctic mission. As the brigade commander said at a budget meeting in response to a request for improved arctic equipment, "We're not an arctic infantry unit. We're a light infantry unit that just happens to be stationed in the arctic. We aren't expected to fight an arctic battle."[30] Individual cold weather training at home station is not enough to guarantee a unit can function in the cold. The Department of Defense must make the logical connection between mission and home-station climates, at least with regards to immediate deployment to cold regions. Once these units are designated, they should be evaluated at a JACT center to ensure they are mission-capable. Current cold weather schools don't offer units this option. The operational commander should be concerned whether the forces he's provided are capable of operating for extended periods of time in a cold region.

All the services have their own versions of cold weather school. The U.S. Army currently operates two principle cold weather schools: The Northern Warfare Training Center[31] at Fort Wainwright, Alaska, and the Mountain Warfare School[32], run by the Vermont National Guard, in Jericho, Vermont. Both schools train several hundred soldiers a year in cold weather operations. In addition, the Minnesota National Guard runs a single two-week train-the-trainer course in

Camp Ripley, MN, for approximately fifty students.[33] The U.S. Marine Corps operates the Mountain Warfare Training Center that offers both unit and individual training.[34] The Marines are able to train four battalion-sized units per year. The Air Force conducts Arctic Survival Training at Eielson Air Force Base, AK, for pilots in the region.[35] Also, the Navy operates the weeklong Cold Weather Environmental Survival Training course at Redington Training Facility, ME.[36] All these schools base their curriculum around individual or buddy-team survival, with the Army and Marine courses offering additional training in light infantry tactics. This curriculum offers all soldiers, regardless of occupational specialty, valuable training in cold weather soldier skills. It is important to note that none of this training offers units or soldiers (other than light infantry) the opportunity to perform their occupational specialty with assigned equipment for any extended period of time in the cold weather. The opportunity to gain critical knowledge is therefore lost. Equipment performs differently at 40 degrees below zero than it does at 70 degrees above zero. Maintenance procedures are different and basic field craft becomes more complex.[37] Although individual survival skills are valuable, an operational commander expects his forces to do more than survive. He expects them perform their assigned mission, to include destroying the enemy, even in a cold region.

Operational Functions

The commander can expect a certain degree of degradation among the operational functions within a cold weather area of operations. Ground movement and maneuver will be slowed considerably, whether by foot or vehicle. Fixed and rotary wing aircraft may be affected by weather both before and after take-off. High winds affect performance, low temperatures affect machinery, and poor visibility affects mission accomplishment.[38] High winds and topside

icing may also affect surface ships.[39] In the event of sea ice, the U.S. Coast Guard maintains the country's only three icebreakers. Command and control is affected by interference due to the northern latitude.[40] Batteries for man portable radios will only operate at half-life, and replacement batteries must be kept from freezing.[41] Modern operational fires should be more effective than in the Aleutian campaign due to the higher mobility of platforms and the ability to engage specific grid coordinates precisely. However, fires employed by this method rely heavily on intelligence. It's yet to be seen if operational level intelligence collection assets will be affected by cold or severe weather. The functions of logistics and protection are intertwined when operating in a cold environment. Fuel consumption may increase anywhere from two to four times depending on each unit's facilities. A large increase in fuel consumption is due to the ground-based forces' use of tent stoves, and vehicles left running to keep engines from freezing. Heaters are needed for other sensitive machinery such as aircraft. Protection of individual personnel as well as equipment requires thorough training to prevent incapacitation from the cold.

It's necessary for the operational commander deploying forces to a cold weather environment to be aware that his forces are battling two adversaries: the enemy and the environment. By recognizing and addressing unique aspects of the space, time, and force factors due to cold, the commander may preclude putting his personnel and equipment at unnecessary risk. The commander’s burden would be significantly reduced if he knew his initial units were trained specifically for cold weather combat.

The strenuous demands of the arctic to keep warm and function are considerably above normal requirements…[42]

Stephan J. Chamberlin, CG, US Fifth Army, *EXERCISE SWEETBRIAR*, 1950

Recommendations

The U.S. military has always been concerned with the ability to fight in the cold, but it's not a typical priority until faced with an actual cold weather operation. The U.S. boasts it can project power anywhere in the world on short notice, yet one cannot ignore the inherent dangers of cold regions. The service components must provide the Commander-in-Chiefs of Unified Commands with forces capable of cold weather operations immediately upon notification. After the end of World War II, a group of German general officers that had fought on the eastern front were questioned at the Army War College about winter operations.

The generals "indicated the primary requirements as: equipment designed to withstand the cold; trained, acclimatized soldiers; exceptionally determined and physically fit officers of all ranks; fully mobile combat and supply vehicles, capable of cross-country movement in deep snow and mud; suitable rations; technical facilities hardened against the cold; and a thoroughly prepared air force."[43]

Each service has a variety of testing agencies and cold weather schools, but these resources alone are not enough to ensure U.S. forces are prepared to deploy directly to a cold region to engage hostile forces. The cost of resourcing all U.S. forces to fight in cold weather upon notification is prohibitive. An alternative is to recognize the unique demands of cold

weather combat and assign it as a standing mission to a select number of forces as indicated earlier. This would give the Unified Command CINCs on-call forces capable of fighting in the arctic.

Forces

Identifying forces to fight in the cold weather doesn't necessitate a large change in force structure. The primary concern is for ground forces that'll be operating for long periods of time away from fixed sites. The Army should designate a cold weather division capable of fighting in the arctic upon notification. The logical choice for this division is the two brigade sized 10th Mountain Division from Fort Drum, NY, with the 172d Infantry Brigade from Fort Wainwright, AK, attached. An additional National Guard brigade from a northern state should be also given the arctic mission, as well as select combat support (CS) and combat service support (CSS) from the Army Reserve as back-up units. The U.S. Marine Expeditionary Units should carry an additional cold weather identifier, similar to the Special Operations Capable (SOC) currently in use. Qualification for the identifier would require a rotation at the U.S. Marine Mountain Warfare school, complete with combined arms training, something which is not currently offered. Even then, the MEU may require an acclimatization period. The ground forces, most at risk from the weather, must be tasked and resourced to execute ground combat in cold weather.

Air Force and Navy units also face personnel and equipment challenges, but may be able to rely more on institutional knowledge and pre-positioned equipment to facilitate their immediate deployment to a cold region of operations. The U.S.A.F. Air Expeditionary Force (AEF) may be designated as cold weather capable. Specific cold weather AEFs could be built from existing forces stationed in cold weather, Eielson AFB, AK, for example. "Both air and

ground crews require special training, so that they become familiar with the special and additional techniques involved in Arctic flying and maintenance."[44] Obviously, this would create a challenge in terms of scheduling AEF rotations. The Navy wouldn't require a specific designation of an arctic capable fleet, but instead rely on institutional knowledge from recurring scheduled arctic exercises. Pre-positioned equipment necessary for intensive de-icing and operations on deck in cold temperatures could carried by organic fleet vessels or be held in port and delivered to fleets as required.

Few aspects of cold weather operations are as important as having a well-indoctrinated crew. Everyone onboard, from the commanding officer to the newest seaman, must have a good understanding of the cold weather environment with which they will be faced and what will be expected of them.[45]

U.S. Navy, *Cold Weather Handbook for Surface Ships*, 1988

Training

The Army should establish a Joint Arctic Combat Training Center (JACTC) modeled after the Joint Readiness Training Center, Fort Polk, LA. The JACTC should be capable of training and evaluating a light battalion task force with attached combat, CS, and CSS assets, as well as a mechanized platoon. The center should provide an opportunity for force-on-force missions, and combined arms live fire exercises. Such a training center would provide U.S. ground forces, Army and Marine, the opportunity to receive an honest assessment of cold weather capabilities, and foster institutional expertise. The Department of the Navy should mandate cold weather training minimums for its forces in order to foster similar institutional

expertise. For example, requiring a carrier battle group to conduct sustained simulated combat operations above the Arctic Circle for one week per year. All the services should continue to operate their own survival and cold weather skills courses as each one is fashioned to their particular needs. This change in the approach to cold weather training would ensure not only individuals, but also units, could deploy directly to a cold weather battlefield and be effective.

Soldiers engaged in cold weather operations should not have to remove their hand protection to update their commander. A computer that works at Fort Bragg but fails in Bosnia is not helpful.[46]

Otto Guenther, LTG, USA, *Department of the Army Joint Service Software Perspective,* 1996

Material

Proper equipment is critical to cold weather operations, but it is also the most cost prohibitive. This is the principle reason for identifying specific ground units as cold weather capable as opposed to outfitting the entire military. The last Army unit to have the arctic mission was the 172 Infantry Brigade (Separate) in Alaska. An Arctic MTOE compliments its standard Modified Table of Organization and Equipment (MTOE). The Arctic MTOE provides the unit with Small Unit Support Vehicles (SUSV) (Figure 4) from Sweden. These unique rubber-tracked vehicles are capable of easily crossing deep snow and mud. However, the SUSVs are extremely costly to maintain, and cannot mount specific U.S. weapon systems such as the TOW missile launcher or machineguns. Snowshoes, skis, arctic camouflage net, and overwhites also require additional funding. Since the brigade no longer has the arctic combat mission, Arctic MTOE

equipment has been drastically reduced or eliminated. The snowshoes and skis have changed little since World War II and units maintain the bare minimum. A recommendation is that a specific MTOE be developed for arctic units. The SUSV should be eliminated as too expensive, and replaced with the U.S. Army Tank-automotive and Armaments Command (TACOM) approved Mattrack™ system. (Figure 5) This is a rubber tracked suspension system that seasonably replaces the tires on all models of HMMWVs, a 30-minute process per vehicle completed at the unit level.[47] The Mattrack™ would enable U.S. ground forces to employ all its HMMWV mounted weapon, navigation, and communication systems using standard procedure, eliminating redundant systems in SUSVs. Tractor versions of the Mattrack™ may be modified for use on 2.5 and 5-ton trucks. Antiquated snowshoes and skis must be replaced with modern versions that are lightweight and more durable. History has shown that mobility is one of the biggest challenges in cold weather combat. The Navy is faced with its own mobility problem with only three icebreakers in service. Additional icebreakers would be too costly to maintain in peacetime, but perhaps allied navies with ice breaking capabilities should be included in our own arctic exercises. Additionally, the Navy must identify cold weather equipment needs and how they'll be filled in the event a large fleet is sent to the arctic for a prolonged period. The U.S.A.F. can use its resident expertise from operations in Alaska and Newfoundland to identify and procure cold weather equipment to outfit additional AEFs for deployment. The most cost efficient method for outfitting cold weather units is adapting current equipment for use in the cold weather, rather than the procurement of expensive new or foreign made items.

Conclusion

The Institute for Defense Analysis conducted a study in 1985 entitled *Cold-Weather Combat: Analogies to Chemical Combat.* The report states, "Like the chemical environment, the cold-weather environment itself kills the unprotected soldier."[48] The study highlights the similarities between operating in a chemical environment and in cold weather, specifically: fear-inspiring environment, leadership requirements, importance of shelter, fatigue, importance of clothing, difficulty of equipment maintenance, visibility problems, timeliness of task accomplishment, and mobility problems. All military personnel know how deadly a chemical environment is, but most are unfamiliar with operations in the cold. The leadership of the U.S. military doesn't settle on half-measures when it comes to chemical training. It's a requirement that all units are able to function in a chemical environment. Therefore, just as it would be unacceptable to send personnel onto a chemical battlefield untrained, so is it unjust to expose friendly forces to a deadly cold weather battlefield without the proper training and equipment. Unlike chemical training that can be done at home station, however, cold weather training must be done in the appropriate climate to gain proficiency. As stated in U.S. Army FM 9-207, "Crews wearing the bulky cold region uniform, especially hand wear, must practice drills and maintenance to gain proficiency in cold weather…"[49] The U.S. military services must take advantage of forces currently stationed in cold regions and schedule recurring training in such an environment in order to maintain proficiency. The Aleutian campaign is a good illustration of needless loss to the elements. Attention should be paid and responsibility given to the services to provide a force with a known cold weather capability.

Figure 1

The lines on this map show the approximate southern limits of the areas in the northern hemisphere in which the average temperature of the coldest month is 0 degrees F (yellow line) and 32 degrees F (red line). *U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory.*

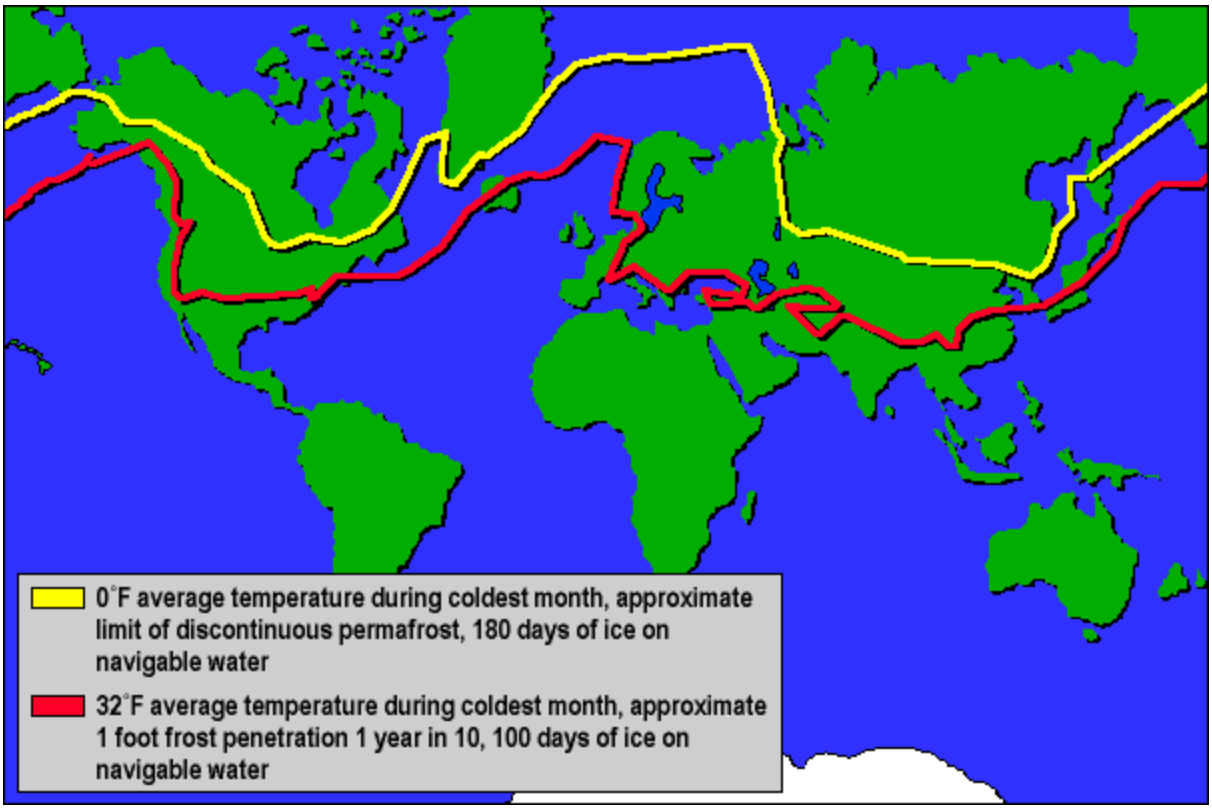

Figure 2. Map of the Aleutian Islands. *Center for Military History, Pub 72-6(2002)*

Figure 3. Map of Japanese Pacific Perimeter. *Center for Military History, Pub 72-6 (2002)*

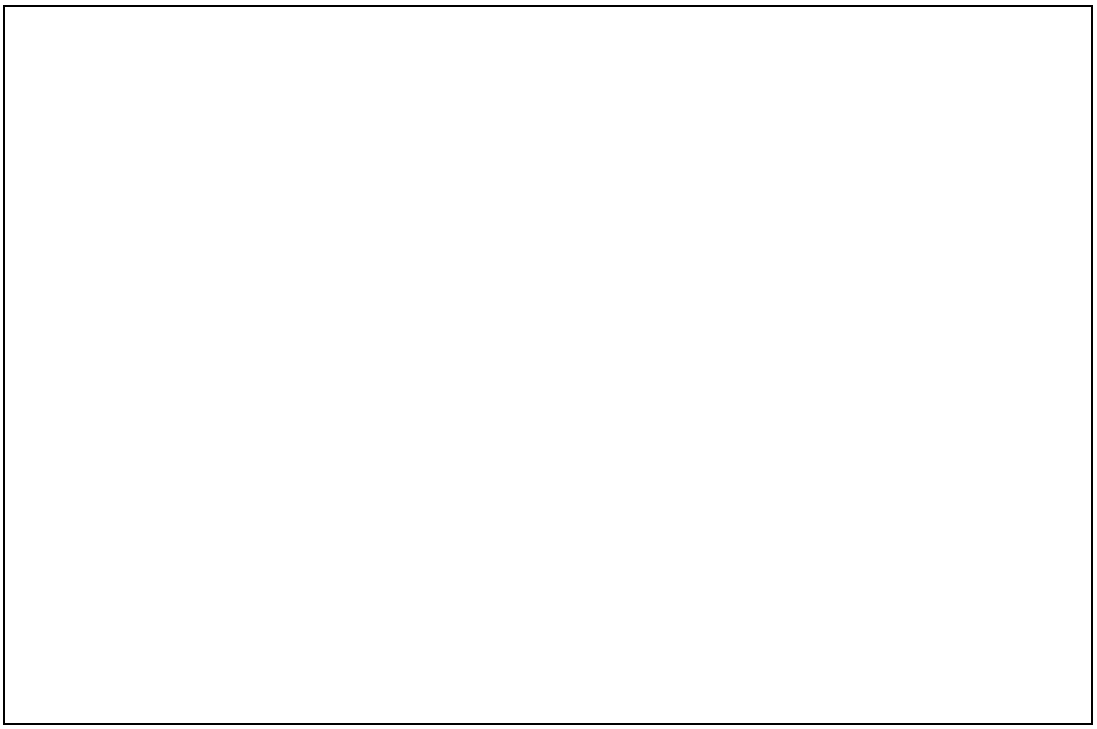

Figure 4. Small Unit Support Vehicle (SUSV). *Tank-automotive and Armaments Command, (January 2002).*

Figure 5. HMMWV equipped with Mattrack™ System. *Mattrack Ô, Inc., (January 2002).*

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